

WAR MEDICINE

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With the entry of the United States into the War the June number of this magazine inaugurates a policy of systematic consideration of the important and enlarged aspects of the care of the cripple which war entails. These have, of course, long since necessitated attention in Europe. The *American Journal of Care for Cripples* should be well qualified for the work it proposes to do. Octavo in size, with page margins of three and four inches, presumably to allow of large, full-page illustrations, it has probably few rivals among magazines at large in substantial impressiveness. Indeed, in these war days wonder is legitimate whether such unusual margins are justifiable. The journal is in its fourth volume and is, of course, already well known to those interested in its aims under peace conditions. The reason for its review in these columns is the added interest of its enlarged scope.

The United States and the War Cripple. By way of introduction the editor says under this caption, in part: "The literature on this

subject (*The War Cripples*) is scanty and scattered, and much of it is available only in foreign languages. Even then most of the material cannot be found outside of libraries in the largest cities. For these reasons the journal will undertake responsibility for making available to its readers much of the significant and authoritative literature dealing with provision for war cripples. The foreign material will appear in English translation, on the literary form of which little emphasis will be laid. The content and information will be the main object of publication. Original contributions are usually valued to an artificial degree by high-standard publications. In a new subject, such as work for war cripples, however, insistence upon original articles would only cause delay and necessitate omission of much valuable matter. The journal will therefore pass on to its readers useful articles from whatever sources they may be obtained. Its best services can be rendered through this policy. In the material published some information may be duplicated or the same work may be reported from varied points of view. But this is a slight disadvantage, and one which cannot be obviated in reproduction from original sources. On the other hand, the expression of divergent opinions may prove of distinct value. The problems are new and a new science of dealing with the adult cripple is being brought into being. New authorities are springing up to meet the demands of national crisis, and the very stress of the situation is producing exceptional results. But the methods developed and the experience gained will be of lasting advantage to the cripple. The editor hopes to have appear in the columns of the journal during the coming year information requisite to an intelligent consideration of problems concerning the disabled soldier."

If it were necessary to comment on the excellence of such purposes, emphasis could be laid on the inclusion here of foreign material in English translation.

The Battle Ground for Wounded Men. In a rather colloquial article, Kellogg presents a most interesting survey of the agencies operative in Canada for the returned crippled. Beginning with the overseas return transportation there is a brief account of the civilian commission under which this is accomplished: "Almost by accident, Canada put into the hands of a civilian commission the handling of this return current of men from overseas. The far-reaching social significance of so doing is only now beginning to lay hold of the public. In testifying before a parliament committee in March the general charged with mustering battalions in Montreal district said tersely that he had no time to consider the handling of returned convalescents—his business was to produce fighting men for the front. Not only do the currents run in opposite directions, but their whole functioning is different. The goal of the Military Hospitals Commission is to take the discards of war and readjust them physically, vocationally, and spiritually to civil life. Gradually as the return current grows in volume, and as the commission becomes better known, its work is being visualized as a great economic and patriotic responsibility and service."

"The Canadian Army Medical Corps had been developed for fifteen years prior to the war. Base and camp hospitals were put in operation to care for the heavy medical work incidental to mustering the expeditionary force. Provision for physical examination of recruits had to be expanded, reorganized and brought to new efficiency following the

rejection of large numbers of unfit men after they had reached England. The corps was constantly drained of some of its most experienced physicians who accompanied the troops overseas. But even had the medical corps been equipped to handle invalided men also, so far as numbers go—and this is a moot point—it is my conviction that the present Canadian system which has vested administrative responsibility for handling returned men in a separate civilian agency is the better one. The physical restoration of a sick or temporarily injured soldier, so that he can return to the ranks, is a job for army doctor and drill master. The rehabilitation of a permanently injured man for the resumption of civilian life where he left off, or even the care of the wide variety of war wrecks who come back from the front, calls into play all manner of specialists, surgeons, psychiatrists, tuberculosis experts, trade teachers, agriculturists and the like.”

The following subjects are then considered in some detail: war consumptives, hospitals for convalescents, vocational work . . . reëducation, “facing life again.” The article makes no pretense at statistical or official statements, and yet by means of individual cases and “human” episodes brings to the fore a tangible picture which a more elaborate treatise might fail to do. There is thus carried an appeal to the social worker at large, the importance of which need not be mentioned.

The Reëducation and Placement of War Cripples. This is a ten-page account of largely personal observations concerning the work for crippled soldiers in France. Of all the Allies, this country earliest faced and met the necessity of constructive work on these lines, with the result that today familiarity with her experience and methods is almost fundamental to the best-directed efforts wherever undertaken.

Report of the Disabled Sailors' and Soldiers' Committee, Local Government Board of Great Britain. The most interesting feature of this report is the following table, giving figures under date of May 4, 1915:

	Army.	Navy.	Total.
Eyesight cases	245	9	254
Wounds and injuries to leg (necessitating amputation)	205	10	215
Wounds and injuries to arm (necessitating amputation)	170	6	176
Wounds and injuries to hand (necessitating amputation)	15	6	21
Wounds and injuries to leg (not necessitating amputation)	277	9	286
Wounds and injuries to arm (not necessitating amputation)	272	3	275
Wounds and injuries to hand (not necessitating amputation of complete hand)	224	11	235
Wounds and injuries to head	123	4	127
Hernia	96	5	101
Miscellaneous wounds and injuries (not included in above)	129	6	135
Chest complaints (including 200 cases of tubercle of the lungs)	298	4	302
Rheumatism	116	6	122
Heart disease	284	—	284
Epilepsy	47	—	47
Nervous diseases	54	11	65
Insanity	29	—	29
Deafness	134	—	134
Frost-bite	6	—	6
Miscellaneous disabilities	150	13	163
Total	2874	103	2977

The Royal Orthopedic Reserve Hospital at Nürnberg, Germany. Under this heading appear three short descriptions of work of rehabilitation in Germany. Although published two years ago (1915) the paucity of data from such sources makes the text worth reading, though there is adduced nothing not already familiar to workers elsewhere. The articles are rather cursory, with emphasis on certain broadly social details, such as earnings and internal business arrangements. The article concludes with original recommendations, long since adopted in principle and amplified.

The Problem of the Disabled Soldier. This article sounds the surest note of any in the current number, and will repay perusal by anyone. With very elemental analysis it considers the precise conditions under which Canada put her forces in the field and proceeds to indicate with a kind of logical synthesis, the general constructive needs to be supplied.

In many respects the principles discussed have closer application to the United States than do analogous principles pertaining to France, England or other countries. Dealing in generalities only the article is one of the most fundamental expositions of the whole problem concerning care of the crippled which have recently come to light and will bear quoting at some length, particularly as some striking paragraphs are nearly complete in themselves and give food for thought.

"It is an interesting commentary upon the nature of the question and upon its importance that the warring nations have adopted measures that are almost identical. Differences in the measures adopted depend not upon any fundamental difference in the principles underlying them but upon differences in the social organization of the nation for which they are designed. Like many other nations, Canada provides an elaborate machinery for removing a man from civil to military life. She is like other nations, also, in that the machinery by which she returns the men of her forces to civilian life is less perfect than that by which they are recruited. The situation should be reversed. The man who joins an armed force is assured a position so long as he remains a soldier or sailor. The man who leaves an army or navy becomes a civilian. At once he is thrown upon his own resources and must commence to gain a livelihood in competition with his fellows; in fairness, no man should be subjected to such hazard until he is fitted to cope with it. This is like no preceding war. It is a war of nations, not of armies. As a result, old methods of providing for ex-soldiers have been found inadequate and new legislation to meet new conditions is being devised and enforced. France and England, for example, are remodeling their laws; Canada which had practically no laws for dealing with ex-soldiers when war commenced, will find it necessary to devise a whole procedure for that purpose. The laws by which France is providing for the return to civilian life of those who have served in her 'armies of the land and sea' are characteristically detailed in their provisions. They are governed in their design by principles similar to those which define the obligation to Canada toward her citizen soldiers and sailors. There is great similarity between these principles and those underlying much of the recent legislation providing compensation for working men injured at their employment. There is sound reason in that similarity. Modern workmen's compensation

laws, such as those of the Province of Ontario, look upon the charge for insuring workmen against unavoidable accident as an item in the cost of producing articles manufactured: about 86 per cent. of the industrial accidents occurring in Germany in 1887 were unavoidable. It follows that the cost of insurance should be added to the price of the article manufactured, and that it should be borne by the consumer; the insurance is a part of the cost of the commodity which he purchases. The manner in which French public opinion on these matters was formed to sound lines is very striking. At first there was a universal tendency to assume that there is nothing left for a disabled man but a lifetime of stagnation as an idle pensioner. A definite policy of public instruction was commenced. In it every method of conveying information was used with all the prestige and authority that official approval could lend. Newspapers, magazines, posters, clergy, trades unions, manufacturers' associations, boards of trade, public service corporations, all united in insisting upon the dual obligation existing between the State and its citizens: there is an obligation upon the State to ensure an independent position to those who have been disabled in its service; and there is an obligation upon the citizen, both to be self-supporting in the measure of the ability remaining to him and to receive from his fellow-citizens no more than is his due. It is much less usual now for a disabled soldier to refuse the treatment by which his disability might be lessened or for him to decline the vocational training by which he might be made self-supporting. All Canadians, soldiers and others, should understand that disabled men who refuse to take advantage of the opportunities for treatment and for training offered to them do so at grave cost to themselves. A man who unreasonably refuses to accept the treatment and training made desirable by his disability penalizes himself; by his own choice he remains less capable of supporting himself than he might be. Moreover, such a man cannot expect to be pensioned for the entire disability existing in him; but only for that portion of the disability which would exist were he to accept reasonable treatment. In France, indeed, it is anticipated by many that the acceptance of appropriate treatment and of appropriate vocational training will be made a military necessity for disabled men. The inadequacy of our educational system becomes very apparent when a full-grown Canadian, a returned soldier, about to leave a hospital cured of a transient disablement, begs to be retained for a little longer in order that his primary education may be completed. If it is done for the disabled soldier, since the lack of education was in no wise dependent upon his military service, a means of obtaining knowledge should exist for every citizen who desires it. A civilian suffering from tuberculosis is permitted, restrained by nothing but the degree of his incapacity, to circulate among his fellows, often to his own detriment and to the danger of those among whom he moves. Can advantage be taken of the peculiar situation of soldiers or sailors suffering from tuberculosis to place restrictions upon them—for the benefit of themselves and their fellows—which are not placed upon civilians? It should be done for soldiers; it is but one of the things which should be done for us all under the authority of a not-yet-established Federal Department of Public Health. If these and similar hardships, unconnected with military service, affecting disabled men, be dealt with

adequately, the first step will have been taken toward remedying some of those defects in our national organization which stress of war has made very plain."

War Cripples in Austria and Germany. This is a superficial but interesting survey of the efforts of the chief Central Powers toward rehabilitation of the crippled. It emphasizes, among other things, the enormous losses in the Central Army and the fact that in Austria as well as in Germany the authorities do their utmost to keep cripples out of sight in populated centers. It mentions the "Cripples' Town" outside of Vienna where, in November, 1915, there were nearly 4000 maimed soldiers in more or less permanent residence.

"Supposing an unfortunate man, both of whose legs had been amputated, to arrive in 'Cripples' Town,' it is found by experience that, by the fact of his being with so many others, all of whom are afflicted with the loss of one or more limbs, he is encouraged to try to make the best of his infirmities. In some cases maimed men are actually employed to teach others, showing them what it is possible for a cripple to do, with determination, courage and taking pains. A man with both legs amputated, for instance, is given stumps, and then with the help of a moving rope fastened to a roller he gradually learns to walk again along the hospital passages. When he has learned to walk quite quickly on the low artificial legs he is given higher ones, and so higher and higher until he reaches his natural height once more. The next stage in his training is to learn to use artificial legs with movable knee-joints, so that he can sit and kneel down. Finally, he receives artificial legs, with not only movable knee-joints but also ankle-joints provided with strong springs, so that his gait acquires elasticity. Thus equipped he practises walking about in the hospital garden with no other help than that of a light cane. It is not enough, however, for these crippled soldiers to learn to walk again, or even to dance. They must learn to become once more useful members of society. Consequently, they enter one of the thirty-two workshops in 'Cripples' Town,' where they are put to do the work for which they are best fitted. A man who was a carpenter, for example, but who has a stiff elbow, is set to do planing as the speediest way of recovering the elasticity of the elbow. A locksmith is put to use a file; a man with a stiff shoulder must try to use a saw, and a stiff-fingered man to weave baskets. In Germany and Austria, however, this is becoming a veritable art, and the artificial limbs of before the war are now wholly out of date, to such pitch of perfection have those of today been brought."

R. P.

Bone-graft Surgery: Its Application to Fracture Caused by Modern Projectiles.—DOWNER (*Military Surgeon*, September, 1917) gives clinical experiences from Serbia and Russia. The most perplexing problems encountered by the military surgeon are the compound comminuted fractures when there is loss of bone substance. These necessitate the transplantation of living bone to act as an internal fixation splint and to stimulate the formation of new bone. In modelling the bone-graft into wedges and pins and inlays, and in fashioning groove joints and dovetail joints the surgeon needs to have had, in advance, good mechani-

ent training in working with tools. The electric current is available nearly everywhere, not only in towns and cities, but also with the armies. This makes it possible to use motor-driven bone surgery outfits which increase the skill and accuracy of the surgeon. A good motor outfit and a strong extension apparatus are indispensable to the bone surgeon at the front. At the beginning of the war amputations were performed almost indiscriminately upon all the fronts. Later, during the second year of the war, more conservative treatment was used, and there was a great decrease in the number of amputations. Many cases, however, were treated too conservatively. Thus badly shattered legs were placed at once in plaster casts, no attempt being made at drainage, and the wounds of entrance and exit being left as they were found upon the battlefield. Often such casts were left on for six weeks, and when removed great destruction of tissues was found and the casts were full of pus. The writer finds that the conservative treatment is still being overdone. The result of these methods he sees in many of the cases which he has operated on. There had been no incision, no drainage, except that made by the projectile, and the parts had been immobilized by some external fixation appliance. The wounds had been allowed to suppurate, the wounds of entrance and exit becoming mere pin-point openings, through which a small amount of pus was steadily oozing. Upon opening such wounds there were found many fragments of dead and diseased bone, surrounded by much dense fibrous tissue, resulting from the chronic inflammation. Not only were the fragments dead, but also the fractured ends of the bones had begun to soften, and that there was very little callus formation. Very few cases of comminuted compound fractures treated in this way turn out successfully. The writer thinks it preferable to remove all sequestra at the start, leaving a free drainage, then the application of a plaster cast, with a window cut in, and the wound dressed daily through the window. When all suppuration has ceased a bone-graft should be taken, usually from the tibia, and inserted by the inlay method. With the electrically-driven outfit a suitable graft can be secured in ten to fifteen minutes, and then fashioned very quickly to fit the place for which it is intended. The writer has seen evidence for both the views which are advanced as to the role of the graft. In some cases it has acted merely as a scaffold, all the new bone coming from the host. In one case, however, in which the graft was fractured the fractured ends reunited without the aid of outside tissue, so that in this example the graft displayed osteogenetic powers. At any rate it may safely be said that the graft acts as a stimulant, and even when placed in infected areas it causes the formation of new healthy bone. It is much better than a metal plate in many cases, for this has been found to inhibit the formation of bone callus. In performing the operation it is well to use two separate groups of instruments, one for making ready the diseased area and the other for preparing the graft. The plaster casts are left on for four or five months, being changed about once a month. After the removal of the cast, massage and usual post-fracture treatment is begun. The results are so good that so long as there is any healthy host bone left in a limb one is justified in giving bone transplantation a trial.

W. H. F. A.

Triple Typhoid Vaccine (*Bacillus Typhosus*, *B. Paratyphosus A*, and *B. Paratyphosus B*).—CRAIG (*Jour. Am. Med. Assn.*, September 22, 1917, lxi, No. 12, p. 1000) states that the necessity for protecting our overseas troops against the paratyphoid fevers has rendered inoculations against *B. typhosus A* and *B. typhosus B* imperative, and the fact that these infections occur also in our own country, and will undoubtedly appear sooner or later in our large cantonments, made it advisable that the entire army should be inoculated as a prophylactic measure. A triple vaccine is prepared at the Army Medical School, Washington, D. C., which contains 1,000,000,000 typhoid bacilli, 750,000,000 paratyphoid A bacilli, and 750,000,000 paratyphoid B bacilli per cubic centimeter. The first dose is 0.5 c.c. and the second and third each 1 c.c. The inoculations are made subcutaneously and at intervals of seven days. Craig concludes, as a result of his studies, that the triple typhoid vaccine, which is the vaccine now adopted for immunizing our entire army against typhoid and paratyphoid fevers, gives as good results in immunization, so far as can be judged by agglutinin curves, as does the typhoid vaccine alone, and that neither the general nor the local reactions following its injection are different in any degrees from those occurring after the inoculation of simple typhoid vaccine. The results, both from a practical and from a theoretical point of view, are all in favor of combining the three organisms in a single vaccine, and it is believed amply justify the use of the triple typhoid vaccine in immunizing our troops against typhoid and paratyphoid fevers. J. M. McC.

The Relation of Psychology to Military Activities.—YERKES (*Mental Hygiene*, July, 1917) suggests briefly a few of the varied lines of service in which the psychologists may be of value in the conduct of the war. In recruiting they have an important special task, namely, of classifying men according to their mental characteristics and of indicating their degree of adequacy for military training or special work in the military organization. Current methods of mental examining are unsuited to military demands, and consequently new and specially adapted methods must be prepared if the results are to be trustworthy and practically serviceable. In examining recruits it is their prospective function to help eliminate those who cannot render service worthy of their hire; to ascertain various degrees and kinds of special ability so that the individual shall be placed in a position of maximum usefulness; and to detect those who by reason of mental instability or psychopathic condition demand the attention of the medical expert. Already experimental psychological studies, by means of appropriate measurements, are being made on men being trained in naval gunnery and on men receiving preparatory training in aviation. By means of such studies it is believed that information will be derived which will be of value in selecting men suitable for these services and in discovering individuals who will improve most satisfactorily under training. W. H. F. A.